

# Cut Flowers:

## Basic Production and Marketing

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Field-grown specialty cut flowers offer a diversity of products and are increasingly profitable for growers throughout the U.S.<sup>7, 10, 13</sup> Although specialty cut flower production is both national and world-wide, each region of a country or state possesses specific climates suited for certain plant species. Unlike imported flowers or mass-produced flowers, local cut flower growers can offer unique regional varieties.

### INTRODUCTION

Specialty cut flowers are any flowers other than roses, carnations, and mums.<sup>1</sup> A marketable cut flower is composed of:<sup>3, 8</sup>

- a flower or flower bud
- straight and sturdy stems at least 12 to 16 inches in length, and
- a consumer shelf life of at least five to seven days

Specific standards for a particular cultivar depend on market requirements for that cultivar and available growing conditions. Some general criteria used for optimum cut flower production are:<sup>8</sup>

- high yield of marketable stems
- uniformity in stem length, flower size, and color
- insect- and disease-resistant cultivars
- continuous production period lasting at least two weeks

### Production

Before any seeds are sown, buyers and markets need to be identified. To ensure profits, new growers should produce crops that are marketable and widely used in the floral industry. Growers should also think about growing crops for old or new niche markets. In a niche market, growers can more quickly command a larger market share as well as a premium price for their products. Establishing a market before starting production is critical for success.

### Plant Selection and Timing

Growers should carefully plan production to maximize profits throughout the season. They will need to make the most of their production area and facilities by carefully considering:

- choice of plant varieties
- planting dates based on projected selling dates
- problems that commonly arise during a crop's production cycle
- production requirements
- production cycles of the crop

Both annual and perennial plant species are grown for cut flower production. Annual species are grown from seed and transplanted every season. Perennial species are grown and transplanted to the production area where they will remain for several seasons, which reduces labor cost. However, if

diseases or insects arise on a perennial species, production may be affected the following season. In annual species, the seed is certified as insect- and disease-free. If an annual crop is affected by diseases or insects, it can be eradicated without any impact on the following season.

Most cut flower production is seasonal, and many growers start their flower business on a seasonal basis only. Growers might have a small amount of land or area near a dwelling that is devoted to cut flower production. However, growers with greenhouses and other growing facilities can take advantage of flower production throughout the year.

#### **Planting and Cultural Considerations**

Growers may sow seeds directly in the field

or start seeds in a greenhouse. Timing may be critical to commanding premium prices for seasonal flowers. Sowing seeds inside can give plants a fast start. Early production can fetch top prices for flowers not yet available from other growers in the market. Seed should be sown indoors eight to ten weeks prior to planting outside, depending on the species. If needed, transplant seedlings to larger pots from their seed or pack trays so the root system can develop before they are planted outside. Moving plants from the greenhouse to the outdoor production area one to two weeks before transplanting will help them adjust to outside conditions and lessen transplant shock. The timing of this move will depend on the cultivar's cultural needs and its market requirements.

### **POPULAR CUT FLOWERS AND FOLIAGE**

Achillea	Hydrangea	Scabiosa
Ageratum	Iceland Poppies	Sedum
Agrostemma	Iris	Snapdragon
Alchemilla	Larkspur	Specialty Roses
Amaranthus	Lavender	Spirea
Ammi majus	Liatris	Sunflower
Aquilegia	Lilac	Statice
Asclepias	Lupine	Stock
Aster	Lysimachia	Strawflower
Astilbe	Nigella	Sweet William
Astrantia	Peppergrass	Tansy
Calla	Phlox	Trachelium
Campanula	Platycodon	Tuberose
Crocasmia	Poppy Pods	Veronica
Coreopsis	Prunus	Viburnum
Cosmos	Queen Anne's Lace	Waxflower
Dahlia	Rudbeckia	Willow
Delphinium	Safflower	Zinnia
Eryngium	Salvia	
Hops		

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Growers have a number of options for cut flower production. They can grow plants in ground beds, raised beds that are one to two feet above the ground, or in containers. Most growers use ground or raised beds. Raised beds are similar to ground beds, but give the grower better control for optimizing production. In raised beds there are fewer disease and pest problems due to more airflow between plants. Raised beds can lessen the stress of over-watering due to better drainage and create an environment less suitable for diseases to occur. Support structures such as staking or netting should be erected two weeks after transplanting to give plants adequate support during growth.

#### **Cultural Considerations**

Growers can extend the season for certain cut flower cultivars by sequentially planting the same cultivar every two weeks. Sequential planting can produce higher quality, longer stemmed flowers of certain cultivars. An example of these types of cultivars is the annual China aster.

The opposite of sequential planting is called “cut and come again,” where flowers can be cut over and over again throughout a season

from the same plants. An example of this type of cut flower crop would be zinnia or the wheat varieties of celosia.

#### **Fertilization**

Soluble fertilizers should be applied every one to two weeks at a rate of 450 ppm of nitrogen, along with a time-release pellet fertilizer at 7 to 12 grams per plant (approximately one tablespoon).<sup>11</sup> The time-release fertilizer should be 10-10-10, 16-16-16, or some variation of equal parts nitrogen-phosphorus-potassium. Carefully read the label on the container or bag for exact amounts of fertilizer to apply for best plant growth. Make sure the fertilizer not only supplies nitrogen to the plants but also phosphorus and potassium. Plants may produce fewer flowers without the proper balance of these essential nutrients.

#### **Harvesting Cut Flowers**

Cut flowers should be harvested at the desired maturity for each species and cultivar. The optimum harvest is when buds are 50, 75, or 100 percent open, depending on market demands and the specific cultivar. Specific cut flower species, such as zinnia



*Figure 1. Fields prepared for annual cut flower production using raised beds and drip irrigation.*



*Figure 2. Field production of annual cut flower species ready for harvest.*





*Figure 3. An example of short-stemmed Ageratum houstonianum 'Leilani Blue' useful in fresh or dried arrangements.*

or gomphrena, should be harvested when buds range from 75 to 100 percent open because earlier harvests can prevent full opening of the flower once it is cut. Flower quality and longevity would decrease with a more mature flower. Harvesting of all flowers should take place during the coolest time of the day, near dawn, to guarantee the flowers are hydrated for the optimal post-harvest life.

Harvested flowers are placed in containers of water or in a floral preservative solution and then transported to refrigerated storage to extend vase life. The cooler temperature slows the respiration of the cut flowers and removes accumulated field heat. Certain cut flowers can be held in cold storage for up to two weeks, but most need to be sold to a retailer or the consumer within a week. Growers need to learn specific information on optimal storage times so they can maintain high flower quality.

### **Insects and Diseases**

Insects and diseases can influence the quality of any cut flower. Growers should be aware of common potential insects and diseases that can be encountered in each

crop. Prevention is the best course of action against infestations of insects and diseases. Always keep production areas, tools, and work areas clean. People touching plants after smoking can spread viruses. Tools should be washed in 10 percent bleach after each harvest and the production area should be free from garbage, food, or debris that could potentially house insects and diseases.

Stressed plants are more susceptible to insects and diseases. Proper cultural practices such as irrigation, fertilizing, pruning, and support should be monitored and adjusted to minimize plant stress. Drip irrigation is the preferred irrigation system for cut flowers because of the reduction in moisture accumulated on plant tissues, reducing the chance of diseases. Drip irrigation also uses less water than other irrigation systems. If insects or diseases are encountered, follow recommended control measures. Extension consultants and grower associations are great resources.

### **Consumer Flower Performance**

Many factors of production influence flower longevity and vase life. Flowers need to be harvested at the proper maturity for each specific cultivar in order to guarantee high quality and long vase life. Proper production practices along with minimal plant stress during production will aid in prolonging vase life. Any damage from mishandling or transporting cut flowers can increase the chance of diseases. Careful handling of cut flowers and proper use of transportation equipment to stabilize and lessen damage during transport will increase vase life. Diseases and insects should be monitored and dealt with using recommended preventative and control procedures during all phases of cut flower production. Reducing stress to flowers imposed by damage from diseases and insects, handling, and transport can increase vase life, quality, and profits.

### Respiration

Harvesting flowers when respiration is low (at dawn) will increase vase life. Respiration rate influences the amount of water needed to sustain cellular turgidity. It also influences carbohydrate consumption, which ultimately affects vase life. Flowers can lose water through leaves, through the stem base after cutting, and through flower tissues. Harvesting flowers during the coolest time of the day and placing the harvested flowers under shade or in refrigerated storage will lower water loss and increase vase life.

### Ethylene Production

Most horticultural crops produce the plant hormone ethylene. Ethylene has been shown to decrease the vase life of flowers and increase the abscission of flower parts. Keeping flower respiration low in refrigerated storage with air circulation can decrease the effects of ethylene.

### Bacterial and Fungal Infections

Bacterial and fungal infections may be present on the plant tissues and start to affect flowers during storage. These infections can also be caused by improper handling or by using tools and water that are not clean.



Figure 4. Darkened leaves on *Gomphrena haageana* 'Lavender Lady' show transplant shock.

### Discoloration of Foliage

Discoloration of cut flower foliage is a sign of aging. Using floral preservative solutions for storing and selling cut flowers will decrease foliage discoloration, increasing their aesthetic value and vase life.

### Water Quality

Quality of water can influence the post-harvest life of any cut flower. Check the pH of available water to determine if it is above 7.5. Acid buffers are available through horticultural suppliers if the water pH is too high. Water uptake is encouraged with acidic (pH 3 to 4) water.

### Floral Preservatives

Prolonging the life of cut flowers using floral preservatives benefits the grower, retailer, and consumer. Most floral preservatives contain three main components: an acidifier, a bactericide, and sugar.<sup>11</sup> The acidifier lowers the pH, making the uptake of the vase solution easier for cut flowers and decreasing the ability of diseases to grow and flourish. The bactericide is a pesticide used to decrease bacterial growth in the vase solution. Bacteria can decrease the vase life of cut flowers by feeding on plant tissues, making the flower less aesthetically



Figure 5. Flower damage from unsuitable production conditions is evident on *Zinnia elegans* 'Envy.'



pleasing, and possibly blocking uptake of the solution in the flower stem. Sugar provides a source of carbohydrates used by the flower during respiration.

## **Marketing Specialty Cut Flowers**

Most growers focus on production of high quality cut flowers, but marketing the flowers cannot be overlooked. Production of cut flowers should never take place unless a buyer or market is already identified.

### **Where to Sell Cut Flowers**

Cut flowers can be sold in wholesale and retail markets. Selling cut flowers directly to the consumer gives the largest profit margin. Direct markets include:<sup>4, 6, 12</sup>

- farmer markets
- on-farm sales
- craft fairs
- roadside stands
- web-based sales
- catalog sales
- classified advertising
- flower brokers

Direct selling of cut flowers can also be through contracts with: <sup>4, 6, 12</sup>

- restaurants
- hotels and motels
- banks and other businesses
- corporate gifts

When selling directly to the consumer, a grower should have at least five different species available for sale at any time, growing at least 15 to 20 different cut flower species throughout a season. Bringing examples to show potential customers can be

effective since many species of cut flowers are not well known.<sup>2</sup>

Flowers sold to local floral wholesalers or supermarket distribution centers generally bring lower profits.<sup>12</sup> Growers that attempt to sell directly to retail florists can get higher prices, but the amount of time to package and deliver the flowers can reduce profits.<sup>8</sup>

### **Adding Value to Flowers**

Value-added cut flower products have been processed to add more value and command a higher price. Some methods to increase value of cut flower production include:<sup>12</sup>

- live arrangements
- dried bouquets
- decorative items with dried flowers
- preserved flowers

These types of floral products can help a grower diversify as well as extend the marketing period.

### **Pricing and Selling Cut Flowers**

Pricing of individual flowers or bouquets will depend on local or regional prices of specialty cut flowers.<sup>12</sup> Prices should initially be set fairly high; they can be lowered later. If prices are too low the optimum price may not be realized. The best way to price flowers is to carefully research prices charged by other growers. If prices cannot be set high enough to cover the costs of producing, harvesting, and handling, the cut flower should not be produced.

Cut flower producers should distinguish themselves from other growers by selling unique cultivars, having a creative booth display, giving knowledgeable advice to customers, providing high quality service, or using distinctive packaging.

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## Cut Flower Organizations



Organizations that actively promote cut flowers are listed below:

- Association of Specialty Cut Flower Growers (ASCFG)  
MPO Box 268, Oberlin, OH 44074  
(440) 774-2887, (440) 774-2435 fax  
[www.ascfg.org](http://www.ascfg.org), [ascfg@oberlin.net](mailto:ascfg@oberlin.net)
- Flower Promotion Organization (FPO)  
(989) 834-1322  
[www.flowerpossibilities.org](http://www.flowerpossibilities.org)
- California Cut Flower Commission  
PO Box 4003 Aromas, CA 95004-4003  
(831) 728-7333, (831) 728-7337 fax  
[www.ccfc.org](http://www.ccfc.org), [ccfc@ccfc.org](mailto:ccfc@ccfc.org)
- American Floral Endowment  
11 Glen-Ed Professional Park, Glen Carbon, IL 62034  
(618) 692-0045, (618) 692-4045 fax  
[www.endowment.org](http://www.endowment.org), [afe@endowment.org](mailto:afe@endowment.org)
- Society of American Florist  
1601 Duke Street, Alexandria, VA 22314  
(800) 336-4743, (703) 836-8705 fax  
[www.safnow.org](http://www.safnow.org), [www.aboutflowers.com](http://www.aboutflowers.com), [jsparks@safnow.org](mailto:jsparks@safnow.org)

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## References

Other good references to use for producing, handling, transporting, and marketing cut flowers are:

*Cut Flower Quarterly*. Publication of ASCFG. Indispensable to new growers. See information under organizations above.

*Field Grown Cut Flowers: A Practical Guide and Sourcebook: Commercial Field Grown Fresh and Dried Cut Flower Production*, Stevens, Alan B. 2nd ed. Avatar's World, Edgerton, WI 53534. 1998. \$24.95

*Florist and Grower*. A Northwest floral community monthly paper. \$24.00/year. 650 Harlow Rd. #110, Springfield, OR 97477.

*The Flower Farmer: An Organic Grower's Guide to Raising and Selling Cut Flowers*. Byczynski, L. Chelsea Green Publishing Co. 1997.

*Growing for Market: A Journal of News and Ideas for Market Gardeners*. PO Box 3747, Lawrence, KS 66046; 785-748-0605.  
<http://www.growingformarket.com>

*Pricing Specialty Cuts*, ASCFG Bulletin No. 2, Association of Specialty Cut Flower Growers. See information under organizations above.

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